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10/668,874

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Shlomo Ovadia

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05/29/2007

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EXAMINER

MALKOWSKI, KENNETH J

ART UNIT

PAPER NUMBER

2613

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/668,874

Applicant(s)

OVADIA ET AL.

Examiner

Kenneth J. Malkowski

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 March 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 and 32-41 is/are rejected.
- 7) ☒ Claim(s) 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claim 1-30 and 32-41 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,671,256 to Xiong et al.

With respect to claims 1, 5, 13, 16, 32 and 34 Xiong discloses a switching node apparatus for use in an optical burst-switched network (column 2 lines 13-16 (optical burst-switched network)), comprising: optical switch fabric (100, Figures 1 and 2), having at least one input fiber port (105, Figures 1 and 2) and at least one output fiber port (115, Figures 1 and 2); and a control unit, operatively coupled to control the optical switch fabric (figure 5)(column 5 lines 24-33 (optical core router)), including at least one processor and a storage device operatively coupled to said at least one processor containing machine-executable instructions (column 5 lines 24-33 (optical core router includes routing processor 505 and database 510)), which when executed by said at least one processor perform operations, including: receiving a resource reservation request to reserve a bandwidth resource provided by the switching node apparatus, said resource reservation relating to a portion of a lightpath comprising a plurality of lightpath segments coupled between network nodes (light-path segments between nodes C1-C5), including incoming and outgoing lightpath segments coupled to an input and an output port of the

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switching node apparatus (100, Figures 1 and 2), respectively; reserving the bandwidth resource (column 7 lines 25-36 (data channel reservation request message is sent to optical core router, status of data channel is changed to unreserved to reserved)); detecting an unavailability of the bandwidth resource after the bandwidth resource has been reserved (in the system as taught by Xiong, bandwidth is “reserved” by assigning a bandwidth space a 1 value in a status bit (column 8 lines 51-53 (the status of a channel is denoted by a status bit, the status bit is updated from a 0 to a 1 indicating the data channel is now reserved))), availability or non-availability is decided based on detecting the value of this status bit (column 7 lines 47-52 (status bit is also changed in the CIB of the optical router, the information carried by the DCR request message will be stored in the DCP management module))(column 8 line 15 (outbound channels are checked to see to see if the channel is reserved or unreserved))); generating a resource cancellation message in response to detecting the unavailability of the bandwidth resource (column 8 lines 50-65 (when the status bit for a channel is a 1, that bandwidth resource for that channel is made unavailable. This status bit acts as a resource cancellation message for the networks nodes, telling the nodes that data channels with a status bit of 1 can no longer be used))(column 4 lines 44-47 (when a data channel is reserved, i.e. the status bit =1, this means that the data channel is committed and bursts cannot be scheduled on the reserved data channel in the normal fashion, i.e. the resource of the data channel has been cancelled to data bursts)))(Figures 8 and 9, each node detects the status as a 0 or 1 which identifies if the bandwidth resource is available or unavailable)(column 4 lines 33-46); and sending the resource cancellation message to at least one network node along the lightpath (column 8 lines 14-26 (router can send a negative reservation message to cancel a

reservation)(column 9 lines 14-29 (reserved channel can be cancelled and made an unreserved channel effectively terminating the reservation)).

With respect to claims 2 and 33, Xiong discloses the apparatus of claim 1 wherein execution of the instructions further performs the operations of: canceling a resource reservation in response to receiving a resource cancellation message (column 9 lines 14-29 (reserved channel can be cancelled and made an unreserved channel effectively terminating the reservation)).

With respect to claims 3 and 14, Xiong discloses the apparatus of claims, where the optical burst-switched network is a mesh-architecture optical network (Figures 1 and 2 both depict mesh-architecture optical networks).

With respect to claim 4, Xiong discloses the apparatus of claim 1, further comprising at least one input port (Figures 1 and 2 both have input ports to optical switched network 100) to link in communication with one or more edge nodes (Figure 2 (edge nodes E1E3)) of the optical burst-switched network (100, Figures 1 and 2).

With respect to claims 6, 17 and 35 Xiong discloses the apparatus of claim 5, wherein the optical burst-switched network comprises a wavelength-division multiplexed (WDM) PBS network (column 3 lines 9-19 (multiple optical core routers transport wavelength-division multiplexed optical links)); and the optical switching fabric provides (100, Figures 1 and 2) switching of optical signals comprising different wavelengths carried over common fibers (column 8 lines 1-14 (incoming channel wavelength is switched to a different output wavelength)) that may be respectively coupled to said at least one input fiber port (coupled to edge 105, Figure 2) and said at least one output fiber port (coupled to edge 115, Figure 2).

With respect to claims 7, 18 and 36 Xiong discloses the apparatus of claim 5, wherein the resource reservation request is sent via a PBS control burst (column 8 lines 43-65 (to reserve a resource set status bit $RC = 1$)), and the resource cancellation message is included as part of a resource cancellation control burst having a format similar to the PBS control burst. (column 9 lines 14-25 (to terminate the reserved data channel a burst with an unreserved channel bit $RC = 0$ is sent on the outbound channel)).

With respect to claims 8, 24 and 37 Xiong discloses the apparatus of claim 1, wherein reserving the bandwidth resource comprises storing resource reservation data in a resource reservation table (Figures 8 and 9 displays stored channel reservation information tables)(columns 7-8 lines 59-67 and 1-14 respectively (channel information base table)) wherein for each action of reserving or canceling the reservation table is updated (columns 7-8 lines 59-67 and 1-14).

With respect to claims 9-10 and 22-23, 25 and 38-39, Xiong discloses the apparatus of claim 1, wherein detecting an unavailability of the reserved resource comprises detecting a traffic contention that limits access to the reserved resource (abstract (data channels can be reserved, once reserved, the channel sends out a reservation acknowledgement to the input node in order to preserve reservation))(column 8 lines 15-26 (if no unreserved channel is found, a negative ack signal is sent to establish path failure thereby limiting access to reserved resources)).

With respect to claims 11-12, 20-21 and 40-41 Xiong discloses the apparatus of claim 1, wherein the resource cancellation message is sent to a network node that is downstream from the switching node apparatus (column 9 lines 14-46 (resource cancellation notifies and alters the

fiber and channel database at the core router. The core router shares information with all network nodes in the network both upstream and downstream in order to provide system configurations)).

With respect to claims 14, Xiong discloses the method of claim 13, where one or more edge nodes (105, 115 Figure 2) are directly connected to at least one switching node of the optical-switched network (C1, C4 Figure 2).

With respect to claim 19, Xiong discloses the method of claim 16, wherein each node is responsible for managing its own resource cancellation messages and releasing its resources (columns 8-9 lines 45-67 and 1-10 (reservation resource management is repeated at each node C1-C4))

With respect to claims 26, Xiong discloses the method of claim 16, wherein detecting an unavailability of the reserved network resource comprises detecting one of a failure of the switching node apparatus or failure of one of the incoming and outgoing fiber links (column 8 lines 14-26).

With respect to claim 27, Xiong discloses the method of claim 16, wherein the resource cancellation message contains data identifying a type of resource unavailability that is detected (column 7 lines 22-36 (data channel messages regarding reservations contains path information and outbound channel identifiers)).

With respect to claim 28, Xiong discloses the method of claim 16, wherein the resource cancellation message contains data identifying the node at which the resource unavailability was detected (Figure 4 includes origin IP address along with each label indicating reservation status)(column 4 lines 18-48 (information transmitted includes inbound and outbound

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wavelengths from each node, mapping of data channel groups and the status of each channel including reserved, unreserved or reservation in progress)).

With respect to claims 29-30, Xiong discloses the method of claim 16, wherein the resource cancellation message contains data identifying at least one label corresponding to one or more resource reservations that are to be cancelled (column 9 lines 14-29 (in order to cancel, the message must identify the channel to be canceled, in this case λ_i , and also the cancellation indicator, in this case $RC=0$))(Figure 9).

Allowable Subject Matter

3. Claim 31 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

4. Applicant's arguments with respect to claims 1-41 have been considered but are moot in view of the new ground(s) of rejection. Although the same references are used to reject the claims, the rejection has been rewritten in order to meet the newly added claim limitations.

Conclusion

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The following patents are cited to further show the state of the art with respect to optical burst switching networks in general:

U.S. Patent Application Publication No. 2002/0154360 discloses an invention substantially similar to the claimed invention

U.S. Patent No. 7,035,537 is cited to show a method for wavelength switch network restoration

U.S. Patent Application Publication No. 2002/0109878 is cited to show optical burst switching with reservation and overhead control

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth J. Malkowski whose telephone number is (571) 272-5505. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ken Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KJM 5/23/07



KENNETH VANDERPUYE
SUPERVISORY PATENT EXAMINER